

Appl. No. 09/322,259
Amdt. dated October 23, 2003
Reply to Office Action of September 17, 2003

REMARKS/ARGUMENTS

Claims 1-16 remain pending in the present application. Applicants have amended claims 1, 5, 9, and 13 to add the word "single" in the language to clarify that the claimed invention randomly selects a single codebook entry.

Applicants respectfully assert that the claims as amended are not obvious over the cited references. Support for these amendments is found in the Specification, page 18 lines 4-6.

In view of the amendments above and remarks below, Applicants respectfully request that Examiner reconsider his rejections.

The §103 Rejections

Claims 1-16, are rejected as being unpatentable over *Tzeng* (U.S. Patent 5,293,449) hereinafter, *Tzeng*, in view of *DeJaco* (U.S. Patent 6,484,138), hereinafter *DeJaco*.

The Cited References

To reiterate, *Tzeng* teaches an analysis-by-synthesis approach to recreating speech in which a linear predictive speech codec arrangement, including a spectrum synthesizer for providing reconstructed speech generation in response to excitation signals; a distortion analyzer for comparing the reconstructed speech with an original speech, and for providing a distortion analysis signal in response to such comparison; and an excitation model circuit receiving and utilizing the distortion analysis signal in an analysis-by-synthesis operation for determining ones of excitation signals which provide an optimal reconstructed speech.

Essentially, *Tzeng* discloses a means for determining an encoding scheme by trial and error (i.e., analysis-by-synthesis). The vocoder of *Tzeng* performs a plurality of speech synthesis operations and takes the results of these synthesis operations and

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compares them to an original speech sample. During these repeated synthesis operations of *Tzeng*, various ones of a plurality of stored pulse trains are used to excite a speech synthesizer when a voiced input is received, and various ones of a plurality of Gaussian sequences are used to excite the speech synthesizer when an unvoiced input is received. In fact, *Tzeng* states, in column 8, that "the Gaussian noise generator 410 outputs each of a plurality of possible Gaussian sequences for use as an excitation signal, with each Gaussian sequence having a different random sequence." In other words the analysis-by-synthesis process disclosed by *Tzeng*, simply selects a plurality of noise sequences from a codebook, excites a speech synthesizer with each of that plurality of noise sequences, and then evaluates the synthesized speech to determine a best fit. This is different from Applicant's claimed invention. *Tzeng* discloses using all of the random sequences stored in a codebook to synthesize speech samples and find which one best matches an original speech sample in order to select a certain one of the random sequences for use in encoding a speech sample.

DeJaco "relates to communications. More particularly, the present invention relates to a novel and improved method and apparatus for performing variable rate code excited linear predictive (CELP) coding. (col. 1, lines 19-24)" Furthermore, the Office Action states that "*DeJaco* teaches a quarter rate unvoice decision on a subframe (Fig. 2; col. 9 line 60-col. 10, line 34)"

Applicants' Invention

In contrast, Applicant's claimed invention (as amended herein) randomly selects a single codebook entry when it is determined that the input subframe to be encoded is below a predetermined energy threshold.

The invention defined by Applicants' claims requires that the each of the subframes having the zero or low-level input, result in a randomized selection of a codebook excitation vector. In this way, similar subframes produce different codebook selections. More particularly, subframes having the zero or low-level input result in the

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use of randomly selected codebook entries, rather than the same codebook entry each time such a subframe occurs within a frame. Applicant respectfully submit that the invention defined by Applicants amended claims does not appear to be disclosed, suggested, or motivated, by the disclosures of *Tzeng* and *DeJaco*, either alone or in combination.

Conclusion

In light of the amendments and arguments presented, Applicants request that the §103(a) rejections of claims 1, 5, 9, and 13 be withdrawn. Applicants further submit that the rejection of dependent claims 2-4, 6-8, 10-12, and 14-16 should also be withdrawn.

Applicant believes he has addressed the Examiner's concerns. Therefore, the claims are allowable over the cited references. Applicants respectfully request that a timely Notice of Allowance be issued in this case.

Please charge any fees other than the issue fee and credit any overpayments to Deposit Account 14-1270.

Respectfully submitted,

Date: 23-OCT-2003

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